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Agricultural Memorandum No 678

Condensation on Eggs I

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1. Background

The problem was put by Mr N D Overfield, ADAS National Egg Quality Specialist. When eggs are withdrawn from cold store, atmospheric moisture may condense on the surface. Organisms already on the egg surface, particularly moulds, may grow in the moist film and penetrate the shell. Such eggs subsequently tend to have a poor keeping history.

In this country, eggs are usually stored at 10°C. Condensation may occur if the dewpoint of the ambient air exceeds the egg temperature, and official advice (though this is sometimes ignored) is not to bring eggs out of store if the dewpoint is over 10°C. An EEC regulation may shortly specify 8°C for egg storage, while 12°C has been suggested as a value which would minimise condensation problems in Britain.

2. Data and Method

Two areas were considered; Plymouth, where eggs from France are unloaded from refrigerated vessels; and greater London, where many eggs are stored for use in the conurbation. London Airport (Heathrow) was taken as representative of the latter area. The hours considered were 06 to 21 GMT, embracing the normal working day at egg depots. Data for 1951-70 were available on magnetic tape, and occasions with dewpoint greater than or equal to 8, 10 and 12°C were counted and tabulated.

3. Results

Fig. 1 shows, for a summer and for an autumn month, that (as would be expected) there is little variation of dewpoint through the day. The hours 06-21 GMT will therefore be considered as a whole. Fig. 2 shows the percentage of hours in each month when dewpoint equals or exceeds the three proposed storage temperatures.

4. Discussion

Fig. 2 shows how a few degrees drop in the storage temperature may aggravate condensation problems considerably. It is also the experience that there is more difficulty at Plymouth than in the London area. On the other hand the present results do not give the daily and seasonal patterns found in practice. The practical finding is that the early morning hours are worst for condensation, and spring and autumn the most troublesome seasons.

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The reason for the discrepancy may be tied up with the prevailing air temperature. When this is high relative to the dewpoint, the condensation film may soon evaporate as the egg temperature rises, or even never form at all. It is planned to investigate this further.

Any comments or suggestions on this paper should be sent to the author.

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Fig 1.

Percentage of occasions when dewpoint
> 10°C at { Plymouth •
London x

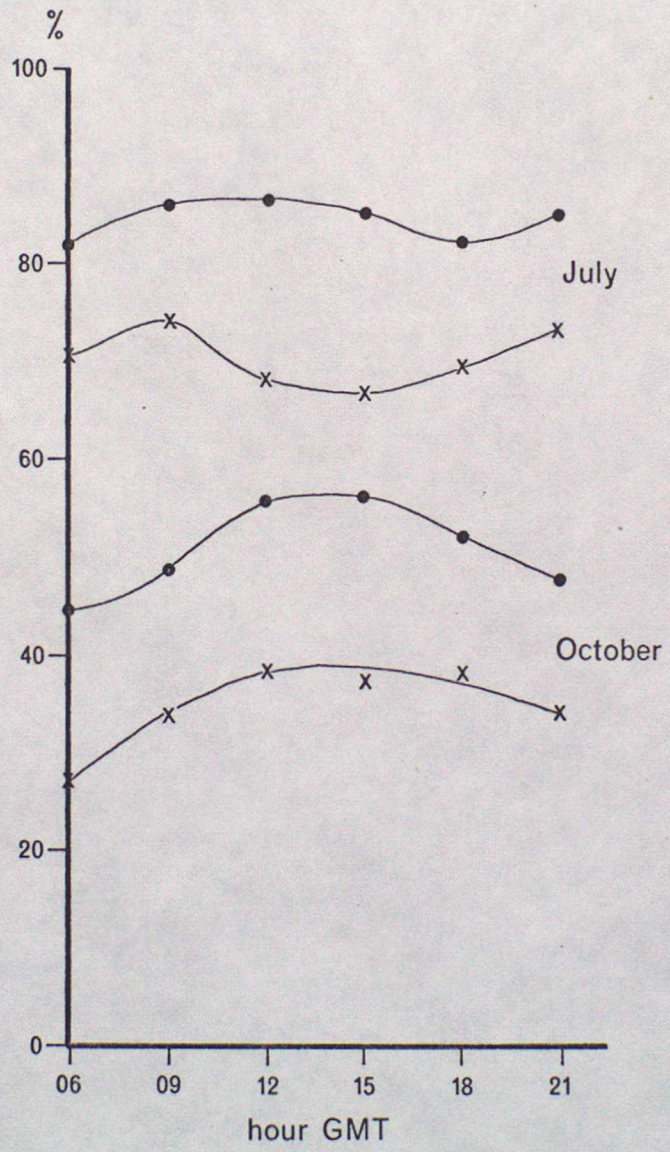

Fig 2. Percentage of hours when condensation may occur on eggs brought in contact with outside air, from storage at the temperatures shown